

I CLAIM:

1. An apparatus for tightening and loosening a cap on a container, comprising:

a support;

5 a first rotary member mounted rotatably on said support and rotatable about a first rotation axis;

a complementary unit that is mounted on said support and that is complementary to and that cooperates with said first rotary member to define
10 a cap passage therebetween, said cap passage having a width that is adapted to be configured so as to be slightly smaller than the diameter of the cap in order to permit frictional and sliding contact between said first rotary member and the cap and
15 between said complementary unit and the cap; and

a driving unit for driving said first rotary member to rotate about said first rotation axis;

wherein at least one of said first rotary member and said complementary unit is pivotable relative
20 to said support in such a manner so as to permit widening of said cap passage when the cap is pushed through said cap passage by an external force.

2. The apparatus of Claim 1, wherein said first rotary member is pivotable relative to said support about
25 a first pivot axis that is parallel to said first rotation axis, said complementary unit including a second rotary member that is mounted rotatably on

said support and that cooperates with said first rotary member so as to define said cap passage therebetween, said second rotary member being pivotable relative to said support about a second pivot axis that is parallel to said first pivot axis and that is aligned with said first pivot axis in a transverse direction relative to said cap passage, said second rotary member being rotatable about a second rotation axis that is parallel to said first rotation axis and that is aligned with said first rotation axis in said transverse direction.

3. The apparatus of Claim 2, wherein said second rotary member is driven by said driving unit.

4. The apparatus of Claim 3, wherein each of said first and second rotary members is in the form of a wheel.

5. The apparatus of Claim 1, further comprising a biasing member that is mounted on said support for urging said first rotary member in a direction toward said complementary unit.

6. The apparatus of Claim 5, further comprising a first shaft that is driven by said driving unit and that defines said first pivot axis, a shaft-mounting seat that is sleeved rotatably on said first shaft, a second shaft that is mounted rotatably on said shaft-mounting seat, that defines said first rotation axis, and that is secured to said first rotary member, and first and second gears that are

respectively secured to said first and second shafts and that mesh with each other so as to permit rotation of said first rotary member about said first rotation axis upon actuation of said driving unit, said first rotary member being indirectly urged by said biasing member through said shaft-mounting seat which abuts against said biasing member.

7. The apparatus of Claim 6, wherein said support includes a guiding rod that extends in a transverse direction relative to said cap passage, said first rotary member and said complementary unit being aligned in said transverse direction, said apparatus further comprising a slide that is mounted on and that is slidable along said guiding rod and that is sleeved on said first shaft so as to permit sliding movement of said first shaft together with said shaft-mounting seat, said second shaft, and said first rotary member in said transverse direction toward and away from said complementary unit.

8. The apparatus of Claim 7, wherein said driving unit includes a servo motor that is connected to said first rotary member.

9. The apparatus of Claim 8, wherein said driving unit further includes a transmission shaft that extends in said transverse direction, that is perpendicular

to said first shaft, and that is driven by said servo motor, and a coupling member that is mounted on said transmission shaft and that couples said transmission shaft to said first shaft.

- 5 10. The apparatus of Claim 9, further comprising a controller that is connected electrically to said servo motor for detecting the amount of torque outputted by said servo motor and for setting a predetermined maximum value of torque that can be
10 outputted by said servo motor.